



## **CORIANDER IS HOME REMEDY FOR VARIOUS DISEASES: REVIEW**

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### **Abstract**

Coriander scientifically known as *Coriandrum sativum* L. belonging to the family Apiceae is yearly aromatic plant which shows a variety of therapeutic properties in traditional medicine as well as used in cooking for flavouring purpose. All part of this aromatic plant are in use as flavouring representative and traditional remedies for the cure of diverse disorders in the folk medicine systems of different civilizations. Interminably, Coriander has been used in traditional medicine as an anti-inflammatory, analgesic, antibacterial, antidiabetic, hepatoprotective, antifungal, anti-epileptic, anti-depressant, anti-mutagenic, anti-dyslipidemic, anti-hypertensive, neuroprotective and diuretic. Coriander shows medicinal properties due to the presence of bioactive constitutes such as flavonoids, isocoumarins, 2-decenoic acid, E-11-tetradecenoic acid, and capric acids, lipids, and some essential oil such as linalool and geranyl acetate. Interestingly, Coriander also possessed metal-detoxifying effect. In this review, I described various medicinal properties of this herb.

**Keywords:** Aromatic plant, Coriander, Medicinal, Remedies, Traditional, Therapeutic

### **Introduction:**

Nature can be described as the oldest and most ample pharmacy of all times, and phytomedicine has been practiced for wellbeing in diverse systems of traditional medicine, including Chinese, Greco-Arab (Unani-Tibb) and Ayurveda. Presently, there is a revitalization of importance in the use of phytomedicines mainly for defensive measures. According to the report of WHO in 2002, around 80% of the world population relies on some forms of traditional medicines mainly the herbs [1].



Coriander is indigenously distributed in Italy, but is widely cultivated in the Netherlands, Central and Eastern Europe, the Mediterranean (Morocco, Malta and Egypt), China, India and Bangladesh, Latin America, Africa, Southeast Asian cuisine and also known as cilantrillo, Arab parsley, Chinese parsley, Mexican parsley, Dhanya and Yuen sail. In India, it is chiefly found in Madhyapradesh, Maharashtra, Rajasthan, Andhrapradesh, Tamilnadu, Karnataka and Bihar [2, 3].

**Botanical Account:** *Coriandrum Sativum* L. belongs to the family Umbelliferae with following botanical categorization

Division	Angiospermae
Class	Dicotyledonae
Sub-class	Calyciflorae
Order	Umbellales
Genus	Apiaceae
Species	Umbellifera

**Leaves:** A small herb having many branches and sub-branches. New leaves are oval but aerial leaves are elongated.

**Flowers:** white, having slightly brinjal like shades

**Fruits:** globular or ovate, with a diameter of up to 6mm divided into 2 parts

**Seed:** The herb bears flowers and seeds at the end of winter.

The height of this herb is in the range of 0.20 and 1.40m at the time of flowering with strong smelling leaves. The mature fruits have a bright and nice flavour and are principally used all over world in ground or volatile isolate form for flavouring sweets, beverages, tobacco products and baked goods and as an essential part for curry powder[4,5].

#### **Historical Cultivation and Usage:**

Coriander is a tropical crop; it requires a cool and fairly arid forest, free weather at the time of flowering and seed formation stages, for superior quality and high yields. The optimum temperature of germination and early growth of coriander is 20<sup>0</sup>-25<sup>0</sup>C.



Green coriander contains 84% water. Seeds contain up to 1.8% volatile oil. The distilled oil contains 65-70% of (+)- linalool, depending on the source and smaller amounts of  $\alpha$ -pinene,  $\gamma$ -terpinene, limonene and p-cymene together with various nonlinalool alcohols and esters. Other constituents isolated from fruits include flavonoids, coumarins, isocoumarins, phthalides and phenolic acid. The high fat content (16-28%) and protein (11-17%) in the fruits make distillation residues suitable for animal feed. The fruits yield 5-7% of ash, 13 % resin, as tringent principle, malic acid and alkaloids, coriander oil contains coriandrol, geraniol and verbriniol [2, 6].

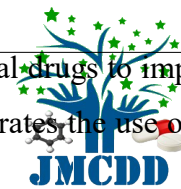
#### Medicinal Importance of Coriander:

All parts of Coriander herb show medicinal activity. Medicinal activities of coriander herb are anti-inflammatory, analgesic, antibacterial, antidiabetic, hepatoprotective, antifungal, anti-epileptic, anti-depressant, anti-mutagenic, anti-dyslipidemic, anti-hypertensive, neuroprotective and diuretic.

1. **Anti-inflammatory:** The ethanolic extract of the *Coriandrum sativum* leaves possessed a significant antioedematogenic effect on paw oedema induced by carrageenan. In this study Indomethacin used as a standard drug. Carrageenan-induced inflammation model is a significant predictive test for anti-inflammatory agents acting by the mediators of acute inflammation the results of this study are an indication that *Coriandrum sativum* can be effective in acute inflammatory disorders [7].
2. **Antioxidant:** The ethyl acetate extract of *C. sativum* root has antioxidant and anticancer properties. *C. sativum* root inhibited DNA injury in fibroblasts and prohibited MCF-7 breast cancer cell migration induced by  $H_2O_2$ , suggesting its potential in cancer prevention and inhibition of metastasis. The herb exhibited anticancer activity in MCF-7 breast cancer cells by affecting antioxidant enzymes leading to  $H_2O_2$  accumulation, cell cycle arrest at the G2/M phase and apoptotic cell death by the death receptor and mitochondrial apoptotic pathways. *C. sativum* root has medicinal value with regard to its antioxidant and anticancer properties in preventing oxidative stress-related diseases and



may be useful as food or supplements used in amalgamation with usual drugs to improve the treatment of diseases such as cancer. This scientific study corroborates the use of this herb in traditional medicine [8].



3. **Heptaoprotective:** *C. Sativum* extract protects liver from oxidative stress induced by Carbon tetrachloride and thus helps in estimation of traditional claim on this plant. Pre-treatment of rats with variable doses of plant extract (100 and 200 mg/kg) appreciably lowered serum glutamate oxaloacetate transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT), and TBARS levels against CCl<sub>4</sub> treated rats. Hepatic enzymes like superoxide dismutase (SOD), catalase (CAT), and glutathione peroxidase (GPx) were significantly increased by treatment with plant extract, against CCl<sub>4</sub> treated rats. Oral administration of the leaf extract at a dose of 200 mg/kg significantly reduced the toxic effects of CCl<sub>4</sub>. The activity of leaf extract at this dose was comparable to the standard drug, silymarin [9].
4. **Antifungal:** The essential oil from *C. Sativum* leaves has strong antifungal and antiadherent activity against *Candida* spp., as well as anti-proteolytic activity against *C. Albicans* and acts by increasing cell membrane ionic permeability rather than disturbing cell wall biosynthesis. All these properties are probably due to the synergistic effect of the constituent mono- and sesquiterpene hydrocarbons identified. Furthermore, pharmacogenomic analyses revealed that *C. sativum* essential oil has relatively low cytotoxicity with putative mechanisms through modulation of gene expression in chemokine and mitogen-activated protein kinase pathways as well as expression of adhesion proteins [10].
5. **Antimicrobial:** The various solvent extract of *C. sativum* like aqueous, methanol, chloroform, petroleum ether and hexane were screened for antimicrobial activity against Enterotoxigenic *E.coli*, Enteropathogenic *E.coli*, *Salmonella typhimurium*, *Salmonella enteritidis*, *Shigella dysenteriae*, *Shigella flexineri*, *Candida albicans*, *Candida tropicalis* and *Candida krusei* isolated from diarrhoeal patients. The preliminary phytochemical analysis of the methanol extracts of the plant showed the presence of carbohydrates,



flavonoids, aminoacids, steroids, sterols, saponins and tannins. The extracts were subjected for antimicrobial activity against at 200mg/ml concentration by disc diffusion method. The results of antimicrobial activity revealed that methanol extract of the plant



6. exhibit good activity compared to chloroform and aqueous extracts to *E.coli*, *Salmonella* sp and *Shigella* Sp. Petroleum ether and hexane extracts did not show any activity [11].
7. **Antiarthritic:** Hydroalcoholic extract of *C. sativum* seed was evaluated in adult Wistar rats by using two experimental models viz. formaldehyde and Complete Freund's adjuvant induced arthritis. CSHE produced a dose dependent inhibition of joint swelling as compared to control animals in both, formaldehyde and CFA induced arthritis. Although there was a dose dependent increase in serum TNF- $\alpha$  levels in the CSHE treated groups as compared to control, the synovial expression of macrophage derived pro-inflammatory cytokines/cytokine receptor was found to be lower in the CSHE treated group as compared to control [12].
8. **Antidiabetic:** Sub-chronic oral administration of *C. sativum* extract (20 mg/kg) in obese-hyperglycemic and hyperlipidemic animal model normalized glycemia and decreased the elevated levels of insulin, insulin resistance (IR), total cholesterol (TC), low density lipoprotein (LDL)-cholesterol, and triglycerides (TG). Since *C. sativum* extract decreased several components of the metabolic syndrome and decreased atherosclerotic and increased cardioprotective indices, its extract may have cardiovascular protective effect [13].
9. *C. sativum* L. extract protected against H<sub>2</sub>O<sub>2</sub>-induced oxidative stress by inhibiting ROS production, up regulating oxidative defence enzyme expression, and increasing nuclearNrf2 levels. These results suggest that *C. sativum* may be a useful candidate for protecting skin cells from oxidative damage [14].



**Figure 1 Various medicinal properties of *C. sativum***

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